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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,112	11/25/2003	Tsuyoshi Tojo	SON-2129/DIV	4488

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RADER FISHMAN & GRAUER PLLC
LION BUILDING
1233 20TH STREET N.W., SUITE 501
WASHINGTON, DC 20036

EXAMINER	
NGUYEN, DUNG T	
ART UNIT	**PAPER NUMBER**
2828	

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/720,112	TOJO ET AL.	
	Examiner	Art Unit	
	Dung (Michael) T. Nguyen	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/883,235.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/25/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

Figure 11 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 6, 8, 10, and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Sassa et al. (5862167).

With respect to claim 6, Sassa et al. disclose in Fig.5 a light emission function layer stack including a cladding layer (5) and an active layer 4 formed on one plane (as interpreted by the examiner, the plane is considered a surface) of a translucent (transparent in col.5, lines 6-17) substrate (1),

two electrodes (7-8) having different polarities (col.4, lines 7-10), which are provided on said light emission function layer stack side;

and a light leakage preventive film (50) formed on the other plane (surface) of said translucent substrate.

With respect to claim 8, Sassa et al. disclose said light leakage preventive film comprising a light reflecting film (layer) (col.5, line 11).

With respect to claim 10, Sassa et al. disclose said light leakage preventive film comprising a metal film (layer) (col.5, line 37).

With respect to claim 13, Sassa et al. disclose each layer of said light emission function layer stack is made from a GaN base semiconductor (col.3, lines 1-14).

With respect to claim 14, Sassa et al. discloses the substrate being made of sapphire (col.5, line 12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sassa et al. (5862167) in view of Hori (4607368).

With respect to claim 7, Sassa disclose all limitations of the claim 6 above except for the light absorbing film.

Hori teaches the light absorbing layer (film) (33) in Fig.3.

Sassa et al. and **Hori** are under the same analogous art of semiconductor laser.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Sassa et al. what is taught by Hori in order to prevent the leakage emitted light returning to the active layer and hence the laser emitted light in the laser device would not be disturbed (col.4, lines 34-37).

Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sassa et al. (5862167) in view of Cho et al. (5301204).

With respect to claim 9, Sassa et al. disclose all limitations of the claim 6 above except for the dielectric film.

Cho et al. teach a dielectric film (col.4, lines 15-21).

Sassa et al. and **Cho et al.** are under the same analogous art of semiconductor laser.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Sassa et al. what is taught by **Cho et al.** in order to reflect the laser light (light leakage prevention) back to the laser cavity by using the dielectric film (as a distributed Bragg reflector) (col.4, lines 15-21).

With respect to claim 11, Sassa et al. disclose all limitations of the claim 6 above except for the thickness of said light leakage preventive film is set to a value $\lambda/4n$ where λ is a wavelength of light emitted from said light emission function layer stack and n is a refractive index of said light leakage preventive film.

Cho et al. teach the thickness of the light leakage preventive film is set to a value $\lambda/4$ (optical thickness, col.4, lines 15-21) (please note that the **optical** thickness of quarter-wavelength is defined as the same of the **dimensional** thickness of $\lambda/4n$ as evidence in Spahn et al. (5726462), col.13, lines 65-67 and col.14, lines 1-3).

Sassa et al. and **Cho et al.** are under the same analogous art of semiconductor laser.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Sassa et al. what is taught by **Cho et al.** to control the quantum efficiency, the stoichiometry, the sharpness, and the tress for the light leakage preventive film (col.4, lines 21-26) in a semiconductor laser to lase efficiently.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sassa et al. (5862167) in view of Cho et al. (5301204).

With respect to claim 12, Sassa et al. disclose all limitations of the claim 6 above except for the light leakage preventive film comprises a multi-layer film of dielectrics and a thickness of each layer of said multi-layer film of dielectrics is set to a value of $\lambda/4n$ where λ is a wavelength

of light emitted from said light emission function layer stack and n is a refractive index of said light leakage preventive film.

Cho et al. teach a multi layer film of dielectrics (col.4, lines 15-21 and col.10, lines 12-14) and the thickness of each layer of said multi-layer film of dielectrics is set to a value $\lambda/4$ (optical thickness, col.4, lines 15-26) (please note that the **optical** thickness of quarter-wavelength is defined as the same of the **dimensional** thickness of $\lambda/4n$ as evidence in Spahn et al. (5726462), col.13, lines 65-67 and col.14, lines 1-3).

Sassa et al. and **Cho et al**. are under the same analogous art of semiconductor laser.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Sassa et al. what is taught by **Cho et al.** in order to obtain more highly reflectivity (col.10, lines 12-16) of the laser light (light leakage prevention) back to the laser cavity (col.4, lines 15-21) by using the multi-layer film of dielectrics (as a distributed Bragg reflector set) and to control the quantum efficiency, the stoichiometry, the sharpness, and the tress for the multi-layer film of dielectrics (col.4, lines 21-26) in a semiconductor laser to lase efficiently.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sassa et al. (5862167) in view of Okumura (6370176).

With respect to claim 15, Sassa et al. disclose all limitations of the claim 6 above except for said translucent substrate being made from GaN.

Okumura teaches the GaN substrate (col.12, lines 8-9).

Sassa et al. and **Okumura** are under the same analogous art of semiconductor laser.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Sassa et al. what is taught by **Okumura** to more effectively prevent return light incident on the substrate from interacting with laser light in the active region 9col.12, lines 9-12).

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung (Michael) T Nguyen whose telephone number is (571) 272-1949. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.

Dung Nguyen

Michael Dung Nguyen